**[Total No. of Questions - 9] [Total No. of Printed Pages - 2]**
**(2123)**

**1360**

**B. Tech 3rd Semester Examination**

**Natural Fibres (O.S.)**

**TE-3002**

**Time : 3 Hours** **Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Attempt five questions in all, select one question from each sections A, B, C and D. Section E (Question-9) is compulsory.

## SECTION - A

1. (a) Differentiate between copolymers and homo-polymers. State various types of copolymers with suitable example for each. **(10)**

   (b) Explain with reference to textile fibres:

   (i) Thermoplastic characteristics.

   (ii) Melting point - Its utility and dependence on the polymers.

   (iii) Hydrophilic property - Its dependence on chemical structure of fibre. **(10)**

2. State the important properties of two protein and two cellulosic fibres. **(20)**

## SECTION - B

3. Describe first order transition and second order transition in a polymeric material with suitable examples. **(20)**

4. What is crystallinity and how it can be measured? Describe any one method to measure crystallinity. **(20)**

## SECTION - C

5. With neat sketch, explain the micro structure of wool fibre. **(20)**

6. Briefly write on followings with reference to cotton fibre:

   (i) Convolutions (ii) Secondary wall (iii) Lumen (iv) Effect of acids and alkalis. **(20)**

## SECTION - D

7. Discuss emulsion polymerization technique with suitable example. **(20)**

8. (a) Explain the bulk polymerization of methylmethacrylate.

   (b) Discuss the solution polymerization of acrylonitrile with its merits and demerits. **(20)**

## SECTION - E

9. (i) Define number-average molecular weight.

   (ii) Define thermoset materials.

   (iii) Explain molecular arrangement in amorphous region of a fibre,

   (iv) Differentiate among isotactic, syndyotactic and atactic polymer.

   (v) Draw chemical structure of cellobiose.

   (vi) Define graft copolymer.

   (vii) Differentiate between silk and wool polymer.

   (viii) Write microscopic appearance of jute fibre.

   (ix) Mention the DP of cotton and jute fibres.

   (x) Describe Directional Frictional Effect in wool fibre.

**(2×10=20)**